ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	
Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems	PR Docket No. 93-61 RM-8013

COMMENTS OF HUGHES TRANSPORTATION MANAGEMENT SYSTEMS

Hughes Transportation Management Systems ("Hughes"), a wholly-owned subsidiary of Hughes Aircraft Company, hereby submits comments in the above-captioned proceeding, in accordance with the Commission's notice dated February 9, 1994, and in accordance with the Commission's Notice of Proposed Rulemaking, 8 FCC Rcd. 2502 (April 9, 1993) (the "NPRM"), regarding proposed rules for Automatic Vehicle Monitoring ("AVM") systems. The purpose of these comments is to respond to proposals contained in ex parte presentations in the AVM docket by PacTel Teletrac ("PacTel") and Southwestern Bell Mobile Systems, Inc. ("SBMS"). Hughes filed comments regarding the NPRM on June 29, 1993 (the "Hughes Comments"), and filed reply comments on July 29, 1993 (the "Hughes Reply").

In PacTel's presentation filed on January 26, 1994 (the "PacTel Proposal") and SBMS' presentations filed February 2 and February 7, 1994 (collectively, the "SBMS Proposal"), PacTel and SBMS offer AVM channelization plans that depart dramatically from that contained in the NPRM. PacTel and SBMS are both manufacturers of AVM

technologies that perform wideband multilateration functions. Accordingly, the frequency allocation schemes presented in the PacTel and SBMS Proposals reflect, for the most part, the needs of such wide-area AVM service providers.[1/]

Each of these proposals, and the response of MobileVision to the PacTel Proposal, dated February 1, 1994 (the "MobileVision Comments"), reflect the ongoing debate regarding co-channel compatibility and bandwidth needs of wide-area users that has occupied much of the commentary in this proceeding. Despite the fact that the Commission, in the NPRM, generously provided for two 8 MHz blocks of spectrum for use by wide-area AVM systems, the proponents of such systems remain unable to reach a consensus as to spectrum allocation. These differences continue to delay adoption of final AVM rules by the Commission, which has a detrimental effect not only on wide-area technologies, but on local-area systems such as Hughes' Vehicle-to-Roadside Communications System ("VRC").[2/]

More importantly, SBMS has offered a new channelization plan for AVM that reduces the contiguous bandwidth available for local-area systems from the 6 MHz originally proposed by the Commission (912-918 MHz) to 3.5 MHz, without any justification whatsoever. As discussed below, sophisticated local-area technologies, such as VRC, that provide for rapid data exchange between vehicles moving at high speeds in multi-lane

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1/ Although the NPRM proposed to allocate AVM frequencies in the 902-928 MHz band on the basis of wideband versus narrow band systems, Hughes has proposed that AVM systems be differentiated on the basis of geographic coverage area of the systems in question. See Hughes Comments at 6-7. Hughes' recommended division is also based on functional differences between multilateration systems like those of PacTel and SBMS, and short-range two-way systems involving communications between readers placed at fixed points along the roadways and passing vehicles. Hughes has proposed calling these wide-area and local-area systems, respectively.

2/ See Hughes Comments at 3-5 (description of VRC System).

settings, require more than 3.5 MHz to operate. This is especially true in light of the edge-of-channel suppression requirements proposed in the NPRM. Remarkably, SBMS has merely taken the two 8 MHz frequency blocks originally proposed in the NPRM, and advocated by SBMS in the rulemaking proceeding, and shifted them within the 902-908 MHz band so as to reduce the amount of spectrum available for local-area service providers. Adoption of the SBMS Proposal would thus effectively eliminate many of the services to be provided, and already being provided, using local-area facilities. The SBMS Proposal should be rejected.

DISCUSSION

I. The SBMS Proposal Unnecessarily Restricts Local-Area AVM Operations.

The SBMS Proposal sets forth a recommended spectrum allocation in the 902-928 MHz band that provides for four 4 MHz bands to be exclusively licensed to wide-area systems. See SBMS Proposal, letter dated February 7, 1994, attachment. These bands are at 906-910, 910-914, 916-920, and 920-924 MHz. Id. Despite the fact that the NPRM proposed allocating identical amounts of spectrum to wide-area systems, at 902-910 and 918-926 MHz, see NPRM at 2502, SBMS would have the Commission shift these bands toward the center, thereby reducing the proposed local-area band from 6 MHz (902-918 MHz) to 2 MHz (914-916 MHz). The SBMS Proposal would further provide two 3.5 MHz blocks for narrow band systems, at 902.5-906 and 924-927.5 MHz.

The SBMS Proposal contains no explanation for SBMS' departure from the allocation proposed in the NPRM. Furthermore, the SBMS Proposal departs from the allocation scheme set forth in SBMS' comments and replies in the AVM rulemaking, which

supported the allocation proposed in the NPRM. See Comments of SBMS at Exhibit A (June 29, 1993), Reply Comments of SBMS, at Exhibit 1 (July 29, 1993).

The frequency allocation proposed by SBMS ignores the fact that many local-area technologies actually rely on wideband signals for effective communications. Allocation of 3.5 MHz of contiguous spectrum for such systems, as proposed by SBMS, is totally inadequate for systems, like Hughes' VRC, that perform sophisticated data communications between stationary roadside readers and vehicle-mounted transponders passing at high speeds.[3/] Other local-area commenters have also asserted their requirement for at least 6 MHz of bandwidth to operate effectively. See, e.g., Comments of the California Department of Transportation at 6 (June 25, 1993) ("California specification based [local-area] systems . . . require six megahertz per channel"); Comments of Mark IV IVHS Division at 1 (June 29, 1993) ("Mark IV [local-area] systems . . . operate with a six megahertz wideband carrier"); Comments of Amtech Corporation at 7-13 (June 29, 1993) (discussing Amtech local-area system requirements for wideband allocation).[4/]

[3/] The Commission should consider that such sophisticated local area systems are already being installed and providing service to the public. For example, as part of the Advantage I75 Program, Hughes has begun installation of VRC readers at commercial truck weigh stations along the entire length of Interstate 75 in the United States and Highway 401 in Canada. The Advantage I75 project will eventually permit commercial trucks to avoid unnecessary stops for repetitive weighing through transmission of current weight and credential information between weigh station readers and truck-mounted transponders. This important program, involving cooperation by the transportation authorities in six states and in Canada, would be seriously limited by being forced to operate on less than 6 MHz bandwidth. Furthermore, as new local-area Intelligent Vehicle Highway Systems are developed and deployed, the amount of data exchanged between moving vehicles and the surrounding infrastructure will increase.

[4/] Hughes notes that even Amtech's "narrow-band" local-area systems may require more than 6 MHz, as proposed in the NPRM to operate effectively. Id. Hughes has developed its VRC technology to be capable of operating effectively within the 912-918 MHz band, even in high speed, multi-lane applications. Accordingly, Hughes does not share Amtech's views that more than 6 MHz is required for local-area systems.

Whatever licensing schemes the Commission adopts for wide-area systems, it is critical to the future of local-area systems that the Commission not restructure its proposed channelization plan in a way that would reduce contiguous spectrum available for local-area systems to less than the 6 MHz currently proposed. Accordingly, Hughes recommends that the Commission reject the SBMS Proposal as currently written.

II. The PacTel Proposal May Cause Additional Unnecessary Delay in Adoption of Final AVM Rules.

PacTel has proposed another alternative channelization plan that would allocate 10 MHz of contiguous spectrum within the 902-928 MHz band to wide-area systems, with most of the remaining spectrum available for use by local-area systems. See PacTel Proposal, attachment. As discussed above, local-area systems require at least 6 MHz of contiguous bandwidth to operate effectively. Therefore, Hughes supports the PacTel Proposal, in principle.[5/]

As the MobileVision Comments indicate, however, the PacTel Proposal may do little to resolve the issues in this rulemaking proceeding regarding wide-area licensing. See generally MobileVision Comments (opposing PacTel Proposal on basis of asserted need for channel exclusivity of wide-area systems). Furthermore, while the PacTel Proposal

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5/ The PacTel Proposal actually contains two proposed channel plans for wide-area systems. See PacTel Proposal at attachment, section entitled Spectrum Utilization. In one version the two forward narrow band paging channels assigned to the wide-area systems remain at their current location at 924.89-925.14 and 925.14-925.39 MHz, while the entire 902.0-902.5 MHz band is available for use by local-area systems. The other alternative, supported by Hughes, is to place the two forward narrow band paging channels at the lower end of the band (902-0-902.5 MHz), leaving the entire 912-928 MHz band available for local-area system use. This will help to avoid interference between high power wide-area paging signals and lower power local-area transmissions. "Grandfathering" of existing wide-area use of 924 MHz for paging channels should, of course, be considered.

discusses claims that PacTel has developed an effective means for spectrum sharing by co-located wide-area systems, the proposal provides little technical information regarding such capability. As a result, significant further study and technical comment may be required before issues raised by the proposal can be resolved. Similarly, the SBMS Proposal leaves open certain questions regarding wide-area system interference. See SBMS Proposal, attached Interim Progress Report at 11-12 (discussing need for further research). Clearly, the Commission's well-intentioned efforts to adopt final rules for all AVM technologies could be delayed even further by the wide-area debate.

For most local-area systems, the Commission is not faced with the kind of fundamental questions that still exist with regard to wide-area systems, such as the need for exclusivity and minimum bandwidth requirements. In fact, local-area technologies, such as Hughes' VRC System, are already being deployed, and projects incorporating such systems are proliferating as innovative applications develop. Adoption of rules governing frequency allocation and technical standards for such systems must occur expeditiously, if the local-area AVM industry is to continue its rapid growth.

In the NPRM, the Commission has already set aside 16 MHz of spectrum for use by wide-area systems. Whatever rules are eventually adopted for wide-area systems licensing, whether exclusive in 4 MHz bands, as proposed by SBMS, or with frequency sharing, as proposed by PacTel, the amount of spectrum proposed to be set aside for local-area systems in the NPRM must not be reduced.

The wide-area/local-area dichotomy in AVM systems actually reflects significant differences in function, geographical coverage, co-channel compatibility and

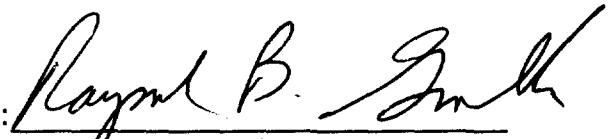
spectrum needs. The Commission is in a position now to adopt rules for local-area systems, while it continues its investigation of wide-area issues.

CONCLUSION

The Commission should not allow disputes among wide-area AVM service providers to delay adoption of rules with regard to local-area systems. Local-area rules are needed as soon as possible to provide certainty and predictability to local-area AVM installations already taking place or planned. Accordingly, Hughes recommends that the Commission adopt rules insofar as they affect local-area systems, and conduct a further rulemaking, or additional investigation with regard to wide-area system requirements. Alternatively, Hughes supports the PacTel Proposal, which offers sufficient bandwidth for sophisticated local-area systems to function to their full capabilities. In any event, the Commission should reject the SBMS Proposal entirely, because its adoption would unacceptably reduce bandwidth for local-area systems.

Respectfully submitted,

HUGHES AIRCRAFT COMPANY

By: 

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